Submitted Abstract

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Abstract

Andorra is characterised by a high mountain climate marked by the geographical and topographical environment with a great local variety. This mountain climate is influenced by the Mediterranean climate with a subcontinental tendency. This high variability in turn has a marked influence on the temporal and spatial evolution of the snow cover. The ski resorts of Andorra have had daily measurements of temperature, precipitation, snow cover and recent snow since the 1980s (Arcalís, Pal, Arinsal, Pas de la Casa, Grau Roig, Soldeu).

This paper focuses on the observations of snow depth and recent snow recorded by the observers of the ski resorts and characterise the vulnerability of snow depth at different altitudes, being more relevant the areas below 1500m according to the last report of the OPCC (Pyrenean Observatory of Climate Change) on climate change in the Pyrenees. In this case, Andorra's ski resorts are located at altitudes between 1600m and 2500m. Based on these series, different indicators have been developed to characterise the evolution of the snow cover in the ski resorts in a regional and simplified manner for monitoring purposes and to provide an orientated tool for decision-making.

In a first approximation, the ski seasons have been objectively categorised (surplus, normal, deficit) and the analysis of the temporal evolution of the indicators has been completed. In the most southerly resorts, there has been a notable decrease in the number of days with a snow depth of more than one metre. The results presented are useful for understanding the effect of climate change in recent years and the planning of adaptation and mitigation measures in winter conditions.